DO SOCIAL PROTECTION PROGRAMMES HELP THE POOR DURING TRADE LIBERALIZATION? EVIDENCE FROM LAOS

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ABSTRACT

Trade liberalization is dynamic in ASEAN. Trade liberalization will promote growth but it will create winner and loser within country, indicating that growth from promotion of trade liberalization might not be inclusive. It is important to protect the poor from negative impacts of trade liberalization by creating social protection programs. However, there have not been adequate studies evaluating whether social protection programs are effective. Therefore, the main objective of this study is to develop the Computable General Equilibrium (CGE) model and use micro-simulation to assess the impact of social protection programs on poverty and income distribution during trade liberalization. The results of this study indicate that cash transfers will help to improve welfare reduce poverty and narrow inequality during trade liberalization.

Keywords: Social Protection Programme; Trade liberalization: Poor; and Laos

JEL Classfication: D33; E27; F13; I32; O15

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1. INTRODUCTION

ASEAN leaders announced the start of the ASEAN Economic Community (AEC) by 2015. It will bring large benefits to ASEAN. However, there are large development gaps between new ASEAN members and former ASEAN countries. These development gaps are one of the most concerning aspects about the AEC. The AEC could bring large benefits for new ASEAN member, but it may also bring costs. There is a fear that the AEC might widen development gaps between new ASEAN and old ASEAN members and might increase poverty and unequal income distribution, especially in the countries that have low competitiveness like Laos.

Despite achieving high economic growth, more than 20% of the Lao people are under the national poverty line and income inequality is projected to increase. It is clear from empirical studies that trade liberalization is good for economic growth. There is still a debate about whether trade liberalization is good for poverty and income distribution in Laos and internationally. Therefore, economic growth from trade liberalization might not be inclusive.

In order to cope with this issue, social protection is one of the most important keys to protect the poor from external shock and help them escape from poverty. Social protection programs, especially cash transfer programs, are considered to be a 'silver bullet for poverty reduction' in Latin America. In Laos, however, the social protection program is weak and in an early stage of development. The poor populations in rural areas especially are not benefiting from it. In its current weak and developing stage, Laos' social program cannot protect the poor from external shock, especially from economic integration. Without social support, Laos will experience a widening income gap, which will lead to social and political problems.

Therefore, it is important for Laos to consider how to establish a comprehensive social protection program to protect the poor from external shock. Despite its

importance, the study of the impact of trade liberalization and social protection on poverty and income distribution is limited. In addition, the impacts of trade liberalization and social protection programs are complex and depend on various factors, such wage and price changes from trade liberalization, consumption and income characteristics of households, program design of social protection, and target of the transfers. Therefore, the impact of social protections on poverty and income distribution is not well understood.

The main objective of this research is to respond the following questions: (1) Does a social protection program reduce poverty and income distribution inequality during trade liberalization? (2) How does trade liberalization affect poverty and income distribution?

There are two main contributions of this paper in the literature and policy context. First, the compensation of the loser from trade liberalization is one of the most important issues for policy maker in developing countries. In addition, cash transfer has gained attention for policy maker in Southeast Asian especially poor country like Laos, but there is no study in quantitative approach in Laos. According to our best knowledge, this study is the first study that attempts to assess the impact of cash transfer during trade liberalization. Therefore, the finding from this study is crucial information for policy makers. Second, there are some studies that use CGE model to assess the impact of trade liberalization on poverty and evaluate the impact of the cash transfer program. However, there is few studies use the link of CGE model and micro-simulation to assess the impact of cash transfer during the trade liberalization. Therefore, this paper provides an important contribution to the literature.

2. LITERATURE REVIEW

Various studies have used a CGE model to examine the impact of trade liberalization in developing countries (Cororation et al, 2005; Li and Zhai, 2000; Fujii and Roland-Holst, 2007; Chaipan et al, 2006). According to these results, the impact of trade liberalization is still inclusive.

Some scholars found that trade liberalization has positive impact on poverty reduction in the Southeast Asian region (Oh, and Kyophilavong, 2013; Ando, 2009; Kyophilavong, et al. 2010; Fukase and Martin, 1999; Adams and Park, 1995; Kitwiwattanachai et al, 2010; and Zhai, 2006; Park, 2009). On the opposite, some scholar found that trade liberalization has negative impact on poverty (Hartono et al, 2007; Corong, 2007; Chaipan et at, 2007; and Vos and Jong (2003). Some scholars also found that trade liberalization has a positive and negative impact on poverty which depends on characteristics of household in rural and urban area (Arinyasajjakorn et al, 2009; Jansen and Tarp, 2005; Cororaton and Cockburn, 2007; and Harrison et al, 2004). Poor households in some countries gain benefits of trade liberalization, but some do not, depending on the characteristics of individual countries, trade structures and kinds of trade liberalization.

Few studies have been carried out on the impact of trade liberalization on the Lao economy. There is some descriptive analysis, Anderson (1998) examined the implications of WTO accession for agriculture and rural development. Akkharath (2003) provided a descriptive study of WTO accession. While many studies conducted in other developing countries have used a CGE model, there are very few studies with CGE model built for the Lao economy. Kyophilavong (2007) analyzed the potential impact of AFTA using a CGE model. The simulation results showed that Laos gains substantial benefits from AFTA, especially in non-agriculture sectors. Fukase and Martin (1999) built a simple CGE model to analyze the economic effect of joining the AFTA. Kyophilavong et al (2010) used a GTAP model and micro-simulation to

estimate the impact of Laos' WTO accession on poverty and Kyophilavong (2011) used the same approach to analyze the impact of Laos' WTO accession on poverty and pollution. However, this study faced several weaknesses. Firstly, the study focused only on WTO accession, which neglects AFTA, and used an old dataset (GTAP data base version 7) when it needed more recent data (GTAP data base version 8). Second, these studies linked the CGE model and Micro-simulation though price and wage changes, which neglects volume changes from trade liberalization. Therefore, it is important to integrate multi-household data in the CGE model in order to capture price and volume changes from trade liberalization. Thirdly, this study used a static CGE model, which neglects dynamic change from trade liberalization.

Literature on Cash Transfer Program (CCT) programs mainly relates to Latin America (Gitter and Barham, 2008; Dearden et al, 2008; Janvry et al, 2006). Nonetheless, there are quite a few studies of CCT programs in Asia. ERIA research teams have reviewed current social protection and direction in some Asian countries (Asher et al, 2010). And Edes (2009) also highlights social protection in the developing Asia Pacific region. In addition, there are few studies using Computable General Equilibrium (CGE) models of cash transfers. Coady and Harris (2004) used the general equilibrium framework to evaluate transfer programs. Bassanini et al (1999) also used a CGE model to evaluate the economic effects of employment-conditional income support schemes for the low-paid in four OECD countries. Related studies on cash transfers such as food aid and subsidies were found in Arndt and Tarp (2001), Gelan (2006), Gelan (2007), and Lofgen and El-said (2000).

In Laos, there are few studies on social protection. Leebouapao (2010) overviewed social protection in Laos. Thome and Pholsena (2009) reviewed health financing reform and challenges in expanding the current social protection schemes. ADB (2004) showed challenges and opportunities for social protection. Burns (2004) presented the issues and options of social protection. Voladet and Vilaylack (2006)

and Leebouapao, L. (2010) described the current situation of social protection mechanisms in Laos and identified constraints on social protection programs. Kyophilavong (2012) attempted to analyze the impact of cash transfer programs on poverty in Laos using micro-simulation. However, his study faced several weaknesses. Firstly, he neglected the price effects from the cash transfer program. Secondly, this study did not consider the operation cost in simulation. Thirdly, this study used data of LECS 3 (2003/2004)- it needs to use new data set (LECS 4 – 2007/2008).

3. TREND OF POVERTY AND EDUCATION AND NUTRITION

The national goal of Laos is to eradicate poverty by 2020. In order to achieve this, the Lao government has implemented the National Growth and Poverty Eradication Strategy (NGPES), an overall development and poverty alleviation framework (GoL, 2004). WB and DOS (2009) showed that the incidence of poverty has fallen since the first Lao Expenditure and Consumption Census (LECS 1), though it fell slowly during 1997/98. The incidence of poverty fell from 46% in LECS 1 to 39% in LECS 2, and to 33.5% in LECS 3 in 28% in LECS 4 (table 1). Inequality has also changed since the first LECS; it increased between LECS 1 and LECS 2, but declined by LECS 3 (table 2).

Table 1: Poverty Trends (%)

	LECS 1 1992/93	LECS 2 1997/98	LECS 3 2002/03	LECS 4 2007/08
Laos	46	39.1	33.5	28
Urban	27	22	20	17
Rural				
With road	43	32	31	30
Without road	61	51	46	43
Lowland			28	20.5
Midland			36.5	29
Upland			34	33

Source: world Bank and Dos (2009).

Note: LECS (Lao Expenditure and Consumption Survey)

Table 2: Inequality Trends in Laos (%)

	LECS 1 1992/93	LECS 2 1997/98	LECS 3 2002/03	LECS 4 2007/08
Laos	30.5	34.9	32.6	35.4
Urban	30.9	39.7	34.8	36.3
Rural				
With road	29.3	32.1	30.3	33.2
Without road	27.5	30.9	29.4	33.3
Region				
Vientiane	29.7	36.9	36	38
North	26.9	34.5	30.7	35.2
Central	31.5	32.5	31	34
South	32.3	32.4	31.4	32.2

Source: world Bank and Dos (2009).

Note: LECS (Lao Expenditure and Consumption Survey)

Despite increased consumption and reduced poverty, malnutrition remains a serious problem. Underweight and stunting in children under the age of 5 was 37% and 40% in 2006 (DOS, 2009). Underweight and stunting declined by only 15 to 17% from 1993 to 2006. This shows that nutrition is one of the most serious problems in Laos. Supporting the poor in order to improve nutrition for children is therefore one of the most important tasks facing Laos. Poverty and education for children are highly correlated. Children in rural areas must travel 8 km on average to the nearest secondary school, while this journey in urban areas averages 3 km. 81% of 6-10 year olds were enrolled in school in 2007/08 compared with 72% in 2002/3. However, only 78% of rural children were enrolled, compared to 94% of urban children. The main reasons for low enrollment in rural areas were: school fees, other expenses, and the need for children to help with agriculture (WB and DoS, 2009).

Table 3: Percentage of households with a child (%)

	Non-poor	Poor	Total
Rural			
With road	39.5	22.7	37.3
Without road	60.5	77.1	62.8
Region			
Vientiane	27.2	6.3	21.8
North	72.9	93.7	78.2

Source: LECS (Lao Expenditure and Consumption Survey)

Table 4: Number of households and children (%)

	Number of household members			Number of children in household		
	Non-poor	Poor	Total	Non-poor	Poor	Total
Urban						
No child	4.3	5.8	4.4	-	-	-
Have a child	5.7	7.1	5.9	1.7	2.3	1.8
Total	5.1	6.8	5.4	1.0	1.8	1.1
Rural						
No child	4.0	4.9	4.1	-	-	-
Have a child	5.9	7.3	6.3	2.0	2.9	2.3
Total	5.4	7.2	5.8	1.5	2.8	1.8

Source: LECS (Lao Expenditure and Consumption Survey)

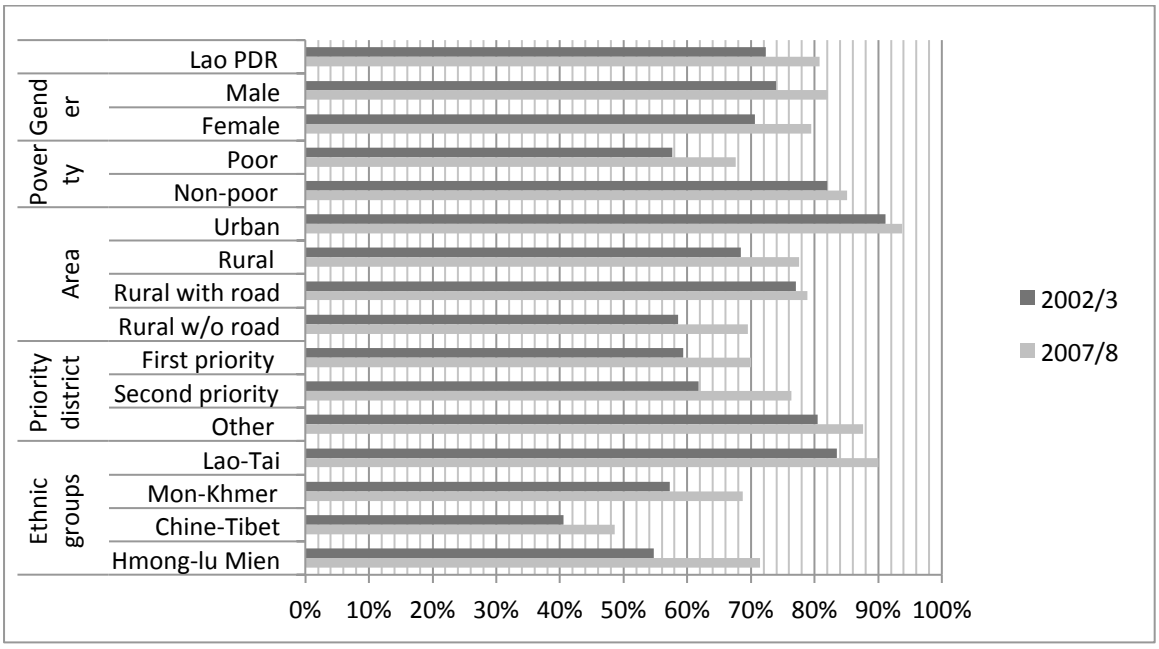
Table 5: Poverty and Nutrition (%)

	Stunting	Underweight
Richest	17.5	19.3
Rich	32	33
Middle	38	41
Poor	38	43
Poorest	43	54

Source: world Bank and Dos (2009).

Note: LECS (Lao Expenditure and Consumption Survey)

Figure 1: School enrolment



Source: World Bank and DOS (2009).

4. SOCIAL PROTECTION PROGRAM

The seventh National Social Development Plan (2011-2015) classified health as one of the four sectors for development and called for full health-care coverage and equity of access by 2020. The government of Laos is committed to achieving the Millennium Development Goals (MDGs) by 2015, with a stress on poverty reduction and health care, in particular for maternity, children and education for all children. Therefore, the Lao government is planning to implement different development projects to achieve these goals.

The labor law has been improved and a decree on minimum wages has been declared. The minimum monthly wage has increased from 290,000 Kip to 348,000 Kip. Moreover, a decree on establishing labor employment agencies was issued and the decree on import and employment of migrant workers issued by the Ministry of Labor and Social Welfare has been improved. The government has implemented labor agreements related to payrolls, working hours and a social welfare system,

which has been established in 1,606 work places covering 98,342 workers. It has also resolved 141 disputes between employers and workers out of 254 dispute cases, bringing a benefit of 1,684 million Kip to the workers.

The government established Decree No. 70/PM, as an elaboration of Decree No. 178/PM on Public Social Welfare and in the same context integrated decrees 71/PM, 194/PM and 145/PM into Decree 343/PM. Furthermore, it issued temporary regulations on public social welfare fund management, and the implementation of the national programme against human trafficking and child sexual abuse was completed following approval by decree No.160/PM. The compensation system for civil servants has been improved from five compensations in decree No.178/PM to eight compensations in decree No.70/PM. The budget contribution to the public social welfare fund increased to 16.5%, of which the contribution from civil servants (employees) increased from 5% to 8% and the contribution from government (employers) was 8.5% of the treasury salary. Members of the social welfare system now pay first and are reimbursed later, which has improved the treatment system to a lump sum payment system. Some workers are protected by a social welfare system that covers approximately 11.7% of the total population of Lao PDR.

The main targets of Seventh National Social Development Plan (2011-2015) consist of: (1) The Labor sector approach includes building the Lao workforce to possess high qualifications, ability, skills, experience and good personality, who would be employable and observe regulations. The workers will be protected and covered by a strong social welfare system. Care will be provided for those persons deprived of opportunities and/or struck by natural disasters. (2) Implementing a policy for people who have done good deeds for the country. It is estimated that 70,478 persons, including revolutionary veterans who worked prior to 1954, national heroes and fighters in the revolutionary war, are entitled to receive benefit allowances. Next, all disabled persons should be provided with housing, construction to be completed

100%. Finally, the plan proposes improving the quality of life for the old, poor and isolated people in 17 provinces. (3) Expanding social insurance to different provinces across the country for health insurance, to cover 50% of the total population, 80% of the total population to have permanent residences by 2015. (4) Improving early-warning systems in 5 provinces and putting in place policies to assist the under-privileged and those affected by natural disasters in a timely manner.

The framework governing the social protection in Lao PDR is regulated by the decree on implementation that was issued in 2006. Other laws in Lao PDR affecting the social protection include: (1) Labor Law (No.06/NA, 2006); (2) Development and Protection of Women Law (No.08/NA, 2004); (3) Trade Union (No. 12/NA, 2007); (4) Decree of Implementation of Social Protection (No.70/PM, 2006). There are 3 types of Social Protection Regulatory Framework in Lao PDR as follows:

Social Security System for Government Employees

From 1975 to 1986, social protection, in the context of health care, was fully financed by the government for all Lao people. During the period, there were two regulations on social protection for employees: Regulation No. 53 and No.54. Regulation No. 53 described the benefit for invalid persons and the payment for the families of government employees who sacrificed their life before and after independence in 1975. Regulation No. 54 determined the benefits for government employees who suffer social contingencies like sickness, maternity, death, death of spouse, loss of working capacity, old age and loss of child allowance.

The government of Lao adopted Decree No. 178 in 1993, introducing a co-payment concept for social security expenditure. Government employees had to contribute 6% of their basic salary to the social security fund and the government, as an employer, had to contribute to the fund and guarantee social security entitlement for employees. Moreover, The benefits covered by this scheme comprise old-age

pension, disability benefit, incapacity benefit (loss of capacity), death benefit, survivor benefit, sickness benefit, maternity benefit, employment injury, child allowance and health care.

In 2006, the current decree, Decree No. 70/PM, on social security for the public sector was implemented to replace Decree No. 178, determining users' contributions to the 352 social security fund. It states that employees' contribution is 8% of their basic monthly salary and the employers' contribution is 8.5% of payroll. The coverage is the same as the previous decree.

Social Security System for Enterprise Employees

The Decree of the Prime Minister No. 207/ PM, Social Security Scheme for Enterprises was approved in 1999 and officially implemented in early 2001. It is a contributory and compulsory scheme. The insurable target groups are all employees who work for The State and for private enterprises. The scheme applies to all employers who have 10 or more employees. The total contribution rate is 9.5% of each employee's earnings, of which 5% comes from employers and 4.5% from employees. The minimum earnings for contribution and benefit purposes are 93,600 kip. The maximum earnings for contribution and benefit purposes are 1,000,000 kip.

However, exceptions are made for those who are working for: embassies; international organizations; companies that have a multinational network located in Laos for a period not exceeding 12 months; companies that have affiliates in other countries and who are sent to work abroad for 12 months or more, who work for the government such as employees, military, police and students. Benefits provided under this system include: old age pension, invalidity benefit, survivor benefit, sickness benefit, maternity benefit, medical care and work injury benefits.

Health Insurance Policy for Informal Sector Population

Ministry of Health approved the Regulation No. 723/MoH to promote Community Based Health Insurance in 2005, which is available for the population in the informal sector, and is based on voluntary membership including family coverage. Benefits include only health care (traffic accidents and cosmetic care are excluded).

In Lao PDR, social protection has a short history compared to other ASEAN countries such as Singapore, Malaysia and the Philippines. In Laos, social protection has been developing for half a century. Despite this, coverage remains restricted to a small proportion of employees in the formal sector as well as informal sector. Besides, coverage is also limited geographically in Lao PDR.

Mainly, Lao PDR lacks first pillar, universal coverage, safety net provisions for the general population. Moreover, the provision of social protection is mostly limited to second pillar, social insurance schemes for military personnel. The social protection that is in place is very limited and is characterized by: (1) Fragmented administration with various ministries, departments and organizations providing the protection; (2) Coverage limited to a small proportion of the small sector; and (3) Focused mainly on old age protection.

5. TRADE POLICY AND CHARACTERISTICS OF LAO TRADE

Since trade policies are the core of the overall development strategy, their formulation and implementation generally synchronize with the stages of economic development in Laos. Evolution of the Lao economy and trade can roughly be divided into two phases: centrally-planned economy and trade control (1975–1985); and market-oriented economy and export promotion (1986–present) (Suvannaphakdy, 2013).

Prior to 1986, the Lao government controlled foreign trade (Otani and Pham, 1996, p. 11). A battery of interventions, including foreign exchange controls, protective tariffs, and import restrictions, were employed to save foreign exchange. Both exports and imports were monopolized by the state, except trade made by joint public and private companies or a few state enterprises. Along with measures like deficit financing and selective credit allocation, these policies had significant impacts on Laos' early economic development. However, as is usually the case, the state control of foreign trade became increasingly complex and inefficient as the allocation of foreign exchange had to comply with the provisions of various bilateral trade and foreign assistance arrangements, leaving little room for flexibility.

However, the external trade system was liberalized in 1987 following the major economic reform in 1986, resulting in the elimination of most of these restrictions on trade in 1988. To boost exports, two types of export promotion policies were implemented. The first type aimed at removing or neutralizing distortions resulting from protectionist policies enacted during the centrally-planned economic system. It included, *inter alia*, liberalization of the foreign exchange allocation system, substitution of tariff for nontariff protection, and rebates of import duties. The other type involved the provision of new incentives for exports, including the establishment of export processing zones and tax incentives for exports.

Together with the continued domestic liberalization, Laos has been integrating into the regional and global economy. Laos joined ASEAN in 1997 for geopolitical and economic development reasons and has gradually integrated into ASEAN over time. The agreement on the Common Effective Preferential Tariff (CEPT) scheme for ASEAN Free Trade Area (AFTA) required Laos to eliminate all of its import duties by 2015. By implementing the CEPT scheme for AFTA, ASEAN members have made significant progress in lowering intra-regional tariffs. However, the actual utilization by traders of AFTA preferential tariff rates is still limited as it accounts for only 5% of

total trade (Manchin and Pelkmans-Balaoing, 2007, p.13). Nonetheless, participating in AFTA has a significant impact on Laos' trading patterns and trading volume (NSC and UNDP, 2006, p. 21). In addition, Laos plans to join the World Trade Organization in 2013, which can provide a larger export market for Laos.

The potential trade-increasing effects of allowing international trade expansion in Laos will provide a number of new opportunities and challenges. The opportunities include the access to a larger variety of intermediate products and capital equipment by many rural people, which enhances the productivity of their own resources; and the stimulation of cross-border learning of production methods, product design, organization methods, and market conditions. Unfortunately, not all of the effects of increases in trade will necessarily be positive. At present, Laos could gain limited benefits from AFTA as the country is characterized by small and medium size enterprises (SMEs) producing low value-added products. Therefore, integrating Laos' SMEs into the regional production network is becoming a major challenge to reaping the full benefits from AFTA. Furthermore, since Laos' key export products are concentrated on mining and hydropower (MOIC, 2011), policies aimed at increasing exports of these products can lead to the scarcity of water resources for rural people through increased use for mining activities and hydropower development. Finally, removing all tariff barriers can lead to a more severe trade deficit, which could result in a depletion of international monetary reserves, currency instability, and a slowdown of economic growth. The expansion of Laos' foreign trade has the potential to raise domestic production, but also the potential to cause some forms of macroeconomic instability and environmental deterioration if more prudent macroeconomic policies are not designed and standards of governance are not raised simultaneously.

Trade trends indicate that Laos has been facing a chronic trade deficit since introducing the New Economic Mechanism (NEM) in 1986, although the situation has

recently changed. Laos imports various goods from other countries, from light and heavy manufacturing goods to processed food, textiles and clothing. Imports from Thailand account for 60% of all imported goods in 2008 (table 6; 7).

Laos' main export commodities in 2004 were textiles and clothing, light manufacturing, and products of mining. However, the export structure of the country has since changed. The heavy manufacturing held the highest share of exports in 2008, higher than textiles and cloth and mining (table 8; 9). The main export destinations are Thailand, the European Union, East Asia and Vietnam. This shows that Lao trade is highly dependent upon Asian countries, especially its neighboring countries. As tariff rates for Laos and its trading partners are already low, Laos might not gain much from the effects of AFTA through tariff cuts.

Table 6: Imports by commodity (%)

	2004	2008
Grains and crops	1.74	1.48
Livestock and meat products	0.25	0.26
Mining and extraction	2.70	1.28
Processed food	15.03	10.12
Textiles and clothing	10.19	6.44
Light manufacturing	18.44	26.77
Heavy manufacturing	46.58	49.13
Utilities and construction	0.53	2.46
Transport and communication	0.82	1.08
Other services	3.72	0.97
Total	100	100

Sources: GTAP data base 7 and 8.

Table 7: Imports by country of origin (%)

	2004	2008
Australia, New Zealand	1.87	1.20
Cambodia	0.06	0.00
East Asia	11.91	17.64
European Union 25	13.54	6.50
Indonesia	0.20	0.24
Latin America	0.26	0.10
Malaysia	0.29	0.62
Middle East and North Africa	0.95	0.10
North America	2.66	1.94
Philippines	0.03	0.03
Rest of Southeast Asia	0.01	0.01
Singapore	5.10	0.44
South Asia	0.44	0.27
Sub-Saharan Africa	1.43	0.22
Thailand	53.67	66.06
Vietnam	5.70	4.16
Rest of the world	1.85	0.91
Total	100	100

Sources: GTAP data base 7 and 8.

Table 8: Exports by commodity (%)

	2004	2008
Grains and crops	5.62	4.36
Livestock and meat products	0.90	0.46
Mining and extraction	9.00	10.07
Processed food	1.56	1.05
Textiles and clothing	27.26	12.74
Light manufacturing	21.20	9.73
Heavy manufacturing	4.91	42.87
Utilities and construction	1.11	2.72
Transport and communication	12.76	9.90
Other services	15.67	6.11
Total	100	100

Sources: GTAP data base 7 and 8.

Table 9: Exports by country (%)

	2004	2008
Australia, New Zealand	0.64	0.78
Cambodia	0.05	0.01
East Asia	7.11	15.75
European Union 25	46.29	24.65
Indonesia	0.14	0.38
Latin America	0.97	1.01
Malaysia	0.16	2.49
Middle East and North Africa	2.34	0.50
North America	11.16	7.67
Philippines	0.05	0.07
Rest of Southeast Asia	0.00	0.01
Singapore	0.53	0.50
South Asia	0.39	0.78
Sub-Saharan Africa	0.55	0.93
Thailand	15.79	27.87
Vietnam	10.63	13.31
Rest of the world	3.20	4.06
Total	100	100

Sources: GTAP data base 7 and 8.

6. METHDOLOGY AND DATA

6.1. CGE model

Computable equilibrium (CGE) model called the Global Trade Analysis Project (GTAP) model was used for our analysis. Computable General Equilibrium (CGE) models combine economic theory and empirical data to create an economic tool for policy

analysis such as changes in tariffs and their effects on whole economic systems. CGE models present the behavior of economic agents (producers, consumers, and government), sectors (industry, agriculture, and services) and factors of production (labor, capital and land). CGE models are of two basic types: a multi-regional computable equilibrium (CEG) model and single country-CGE model.

The Global Trade Analysis Project (GTAP) model, a multi-region computable equilibrium (CGE) model, is one of the most popular models for analyzing the impact of trade policies.[1] There are various advantages to the GTAP model. Firstly, since it is a multi-regional model of world production and trade, it can take into account the overall trade implications of AFTA as well as third-party countries. Secondly, it contains a database for different sectors and thus can explore the trade implications for various sectors of interest.[2]

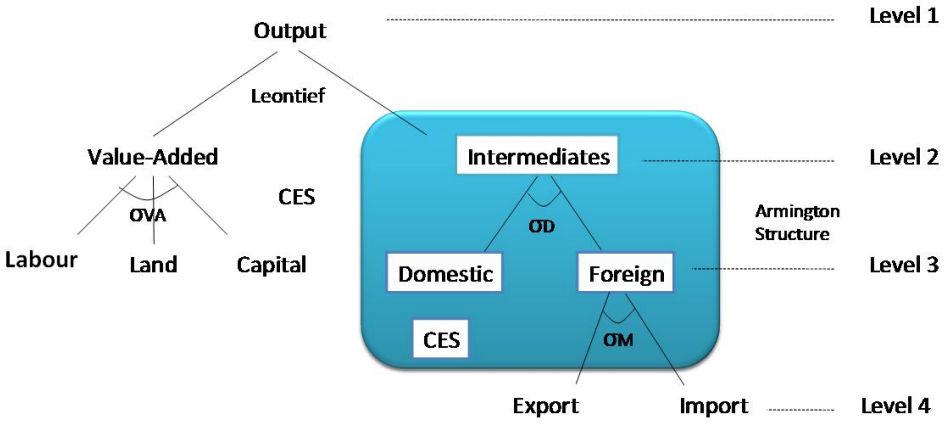
The GTAP model assumes perfectly competitive markets, where the zero profit condition holds, and that all the markets are cleared. The regional household allocates expenditure across three categories: private household, government, and savings. It derives income from the 'sale' of primary factors to the producers, which combine them with domestically produced and imported intermediate composites to produce final goods. These final goods are in turn sold both domestically to private households and the Government, and exported to the rest of the world. Both the Government and private households also import consumer goods from the rest of the world. A global bank intermediates between global savings and regional investments by assembling a portfolio of regional investment goods and selling shares in this portfolio to regional households in order to meet their savings demands. Finally, a global transport sector assembles regional exports of trade,

[1] The origin of the GTAP model is based on the ORANI model, a single country CGE model, a first CGE model for the Australian economy (Dixon et al, 2002). The GTAP model extended the ORANI model by allowing international trade, which introduced a global transportation sector and savings institution.

[2] For more details, see Hertel (ed), 1997. A graphic presentation of the GTAP model, with particular emphasis on the accounting relationships, is given by Brockmeier (1996).

transport and insurance services and produces composite goods used to move merchandise trade among regions (Hertel eds, 1997). The flowchart of the GTAP model and production structure in the GTAP model is illustrated in Figure 2.

The latest version of the GTAP database, version 8, is used for this study. To facilitate our analysis, regions have been aggregated into 21 separate sub-regions (see Appendix 1). All 57 sectors remain as delineated in the GTAP database (Appendix 2).



Source: Hertel (ed.),1997.

Figure 2: Production structure in the GTAP model

The model closure and free parameters are important factors that influence the simulation result in the CGE model. Macro closure is an important factor that influences the simulation result from the GTAP model. Closure divides the variables in the model to endogenous or exogenous variables. Endogenous variables are determined by the model, but exogenous variables are determined from outside the model. Macro closure is based on mainly characteristics of the economy in the country of focus. The closure of GTAP model has various elements such as population growth, capital accumulation, industrial capacity, technical changes, and policy variables (tax and subsidies). However, in order to simplify the closure, we use the standard GTAP closure, which is called “Neo-classical” closure. This closure assumed

that all prices are flexible; there is perfect competition (all firms earn zero pure profits); full employment and factor mobility within regions; investment expenditure is determined by savings rate; tax rates are fixed.

Parameters are one of the most important considerations in a CGE model. Some studies have found that different parameters lead to different policy results (Abler et al, 1999). International trade is linked thought Armington substitution among goods differentiated by country of origin. Trade liberalization simulations can produce positive or negative impacts depending on the Armington elasticities. Basically, some parameters for this study are calibrated from SAM. However, some parameters for the CGE model are not available in Laos. As there is not an estimation of a free parameter in Laos, we used the free parameter from Warr (2006).

6.2 Micro-simulation

Household welfare is affected by four factors: changes in revenue, changes in expenditure, changes in inputs, and changes in wages (see equation below). As mentioned in the research framework, the measurement of welfare changes due to trade liberalization uses the top-down approach linked to the GTAP model and micro-simulation. There are two steps to estimating the effect of trade liberalization on household welfare. Firstly, we estimate producer and consumer price changes, and factor production price changes from the GTAP model. Secondly, the price and output changes from the GTAP model are used for micro-simulation (Figure 3). Household welfare change is calculated using the formula in Chen and Ravallion (2004) and Ravallion and Lokshin (2008).

The results of the GTAP model indicate that the four factors are influenced by changes in consumer and producer prices, and wages. The changes in the price and production of particular food and non-food items alter household welfare, which is based on a share of revenue from these items. Changes in international demand for

particular goods affect household incomes, which depend on a proportion of their marketed production of goods. Wage changes influence household income according to the share of waged income received. Price changes also affect household consumption, with an increase in prices decreasing household welfare. The welfare impacts from trade liberalization in the monetary value of the change in utility for household income can be expressed as follows[3]:

$$g_i = \sum_{j=1}^{57}\left[p_{ij}^s q_{ij}^s \frac{dp_{ij}^s}{p_{ij}^s} - p_{ij}^d(q_{ij}^d + z_{ij})\frac{dp_{ij}^d}{p_{ij}^d}\right] + \sum_{k=1}^{2}(w_k L_{ik}^s \frac{dw_k}{w_k})$$

= (change in revenue) – (change in expenditure) – (change in input) + (change in wage)

g_i = The monetary value of the change in utility for household i

$p_{ij}^s q_{ij}^s$ = The revenue (selling value) from household production activities in sector j

p_{ij}^s = Supply Price from household i in production activities in sector j

q_{ij}^s = Quantity supplied from household i in production activities in sector j

$p_{ij}^d(q_{ij}^d + z_{ij})$ = T the (negative) weight for demand price changes

p_{ij}^d = Demand price from household i in production activities in sector j

q_{ij}^d = Quality demanded from household i production activities in sector j

z_{ij} = Commodities used as production inputs, of which z_{ij} is used for production goods in sector j

$w_k L_{ik}^s$ = The weight for changes in the wage rate for activity k

w_k = Wage rate to activity k

L_{ik}^s = Household's "external" labor supply to activity k

[3] The measurement of welfare impacts from trade liberalization has data constraints because initial data of price and wage levels are not included. Nevertheless, this problem can be overcome by calculating a first-order approximation of the welfare impact in a neighborhood of the household's optimum (Chen and Ravallion, 2004; Ravallion and Lokshin, 2008).

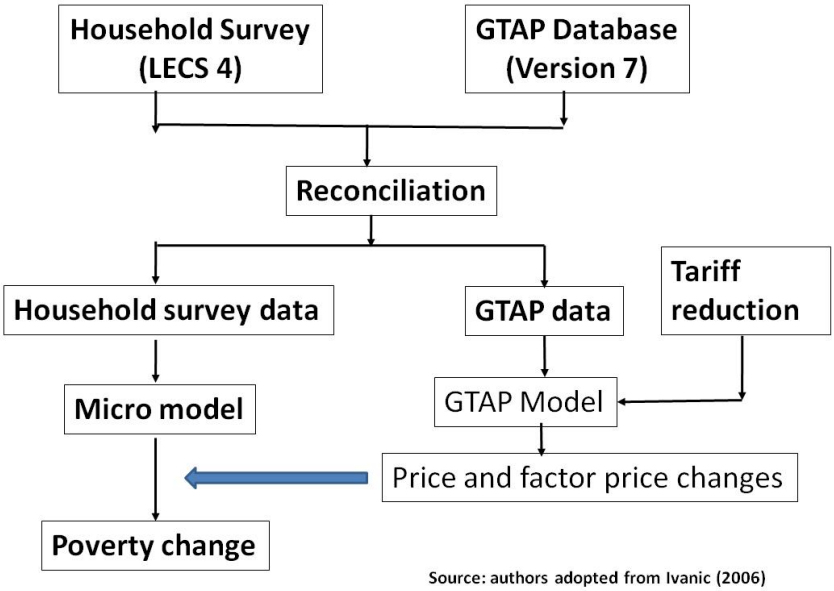


Figure 3: Methodology framework, poverty analysis

6.3 Data Matching

There are 57 sectors of production and consumption in the GTAP database. There are 356 categories for consumption and 117 categories for production in the third Lao Expenditure and Consumption Survey (LECS4) from 2007/2008. Therefore, in order to link the results from the GTAP model to the micro-simulation model, it is important to reconcile the data. The reconciliation of data from LECS4 with the GTAP database was achieved in the following way[4].

Consumption and production

We used GTAP database version 7, which consists of 57 sectors; factor products included land, capital, skilled labor and un-skilled labor. We matched consumption and production from LECS4 to the GTAP database. In LECS4 there are 357 categories for consumption and 117 categories for production. Since the agricultural section in LECS4 does not contain the value of sales and the cost of the agricultural products, we cannot use the information in this section. However, the diary section of LECS4 records the monthly transactions of agricultural income and costs. So, we have

[4]It is important to note that while this study reconciled sectors of consumption, production, wages and income, it did not reconcile their value.

obtained information on agricultural income by using the diary section of LECS4, but it is possible that this income has been underestimated because the reference period is monthly.

Labor

There are two types of labor in the Lao GTAP model: skilled labor and un-skilled labor. Skilled labor has been defined by whether wage earners have completed at least primary education. Unskilled labor has been defined by whether wage earners have not completed primary education. Since each entry on wage incomes in LECS4 has an ID for each person but does not include information on the industry, the industry in which a person is engaged for the greatest number of days and hours has been chosen as the industry supplying the waged income.

Household income

Change in per capita income is used as the welfare indicator in this study. Household income includes agriculture, non-agriculture business, waged income, and expenditure on own-produced agricultural products. Own-produced consumption represents a large portion of household consumption and to neglect this area of income would be to underestimate household income. New income in the simulation is calculated by adding the estimated gain to income in the baseline (as in Chen and Ravallion, 2004).

Poverty line income

An official estimation of the income that constitutes the poverty line is not established in Laos. Estimation of the poverty line in Laos is mostly gauged from expenditure. Official per capita expenditure in LECS4 established levels of poverty. The poverty line was obtained by taking the mean per capita expenditure for poor

households, based on their expenditure.[5] The means were taken separately in four regions, both urban and rural, because poverty expenditure in LECS4 is organized in the same way. Therefore, the poverty rates in this study match those using the expenditure poverty rates in LECS4.

7. SIMULATION DESIGN AND RESULTS

There are various channels of impact from trade liberalization on the economy and poverty (Winter, 2004) and the impact of cash transfer program to poverty. However, in order to simplify, we will focus on tariff reduction in trade liberalization and the impact of cash transfer programs without consideration of conditional perspectives. In order to capture the impact of cash transfer programs during trade liberalization we designed simulations as follows:

Simulation 1: Impact of trade liberalization

The impact of trade liberalization focuses on AFTA, because ASEAN countries have removed tariffs and will move to the ASEAN Economic Community (AEC). The possible impact of AFTA on the Lao economy is shown through four simulation scenarios as follows: The impact of AFTA on the Lao economy is first reduced tariff rates. We assume that the Common Effective Preferential Tariff (CEPT) Scheme for AFTA will be reduced to 0% in 2015.[6] The effects of an improvement in trade facilitation and in time costs reduce overall trade costs. This approach is followed by Hertel, Walmsley, and Itakura (2001); Minor and Tsigas (2008) and Stone and Strutt (2009). We assume a reduction in costs of 25%[7] in the Lao economy. Trade liberalization could promote Foreign Direct Investment (FDI) (Brown and Stern, 2000). By improving institutions and thus the climate for doing business, AFTA may result in

[5] The poverty line was set at the $1.25 poverty line comes to 142,181.56 kip per month ($38) for 2005. following by Engvall et al (2009).
[6] We do not consider the effects from the service sector.
[7] We will shock ams(i,r,s) 10% for reducing cost by25% (From Laos to ASEAN countries and from ASEAN countries to Laos)

increased Foreign Direct Investment (FDI) in Laos. We assume that the FDI inflow will increase by about 15%[8].

Simulation 2: Impact of cash transfer program 1

By considering the budget constraints and effectiveness of cash transfer programs, it is important to target to the most vulnerable households, which might face negative impacts from trade liberalization. We assume that the Lao government will establish a comprehensive national cash transfer program, which targets poor households with one or more children (under 13 years old) in rural and urban areas. As mentioned earlier, poor households suffer from low rates of enrollment in primary and secondary school and poor nutrition. The condition for this cash transfer is a requirement that parents support their children to finish primary school. Local government, including the village, district and province levels, will be in charge of this project. In order to analyze the cost effectiveness of this program, the amount of cash transferred to poor households with children in rural and in urban areas by 10% of their annual income.

Simulation 3: Impact of cash transfer program 2

In order to consider to reducing conflicts when implementing cash transfers we also increase cash transfers to non-poor households with children in rural and urban areas. This assumption is based on the budget availability of the government.

The cost of cash transfer program was estimated. The total cost for this program for payment for household is 99 million US$ per year. It is important to note that this amount include non-poor household in rural and urban area.

From area perspective, the payment for rural area is 70.2 million US$ and urban is 29.5 million US$. It shows that payment for household with children in rural area is

[8]We will shock qo("Capital", REG) is the variable for capital endowment and it is set as exogenous under the standard GTAP model.

more than two time higher than in urban area. It is not surprise because the number of children is larger in rural area than in urban area. The cost from poor household and non-poor household with children, the payment for poor household with children is 15.9 million US$ per year but the payment for non-poor household with children is 83.7 million US$ per year. It shows that it is cost effectiveness if the program considers to pay to poor household with children as the Lao government face budget constraints (see appendix 1).

From the payment for rural poor by region perspective, north region cost 7.8 million US$ per year, central region cost 4.4 million US$ per year, and the south region cost 1.9 million US$ per year. In addition, the payment for urban poor by region was also estimated. The cost for north region is 0.74 million US$ per year and the cost for central region is 0.78 million US$ per year and the cost for south region is 0.16 million US$ per year (see appendix 2).

Before considering the impacts of trade liberalization and cash transfers on poverty and income distribution, we first consider the base line of poverty and income distribution.

The characteristics of poor and non-poor households with and without children are shown in table 10.

It shows that household size of the poor with children in rural areas (7.01 person) is larger than the non-poor with children in rural areas (6.26 person) and the poor with children in urban areas (6.54 person).

In addition, the number of children in poor rural households (2.67 persons) is larger than the number of children in non-poor rural households, (2.31 persons) in poor urban households (2.32 persons), and in non-poor urban households (1.76 persons).

On the other hand, the consumption per year of poor rural households with children (10.4 million kip) is lowest compared to non-poor rural households (12.4 million kip), poor urban households (17.1 million kip), and non-poor urban households (30.6 million kip). It shows that poor households with children in rural areas are poorest compared to others. Therefore, interventions to reduce poverty should focus on this group.

Poverty and inequality of poor and non-poor households with and without children are shown in table 11. The table shows that the inequality of households with children in urban areas (0.59) is higher than that of households with children in rural areas (0.43). In addition, the highest inequality of households with children is in the south of Laos, where the Gini coefficient is 0.8.

Table 10: Characteristics of poor and non-poor households with and without children (Baseline of simulation)

Items	Rural				Urban			
	Poor		Non-Poor		Poor		Non-Poor	
	With children	Without children	With children	Without children	With children	Without children	With children	Without children
Lao PDR								
Households Characteristics								
Number of household	1,010	180	3,975	1,067	74	31	1.,200	759
Total number of children in household (person)	2,696	0	9,195	0	172	0	2,110	0
Number of children in household (person)	2.67	0	2.31	0.00	2.32	0.00	1.76	0
Age of household head	44.63	50.10	42.84	49.61	45.72	49.81	48.02	53.30
Sex of household head								
Male (household)	975	161	3,836	985	65	29	1,098	669
Female (household)	35	19	139	82	9	2	102	90
Education of household head (person)								
Kindergarten	163	30	531	114	7	2	38	30
Primary school	441	82	1,427	396	27	12	326	260
Lower secondary school	370	65	1,793	478	33	12	496	243
Upper secondary school	24	2	126	32	2	2	143	78
Technical school	11	1	88	37	4	2	132	93
University	1	0	10	10	1	1	65	55
Household size (person)	7.01	4.38	6.26	4.01	6.54	4.16	5.85	4.42
Consumption of household (thousand kip/household/Year)	10,400	11,500	12,400	22,800	17,100	12,900	30,600	31,200
Consumption of household (thousand kip/household/Month)	870.62	961.04	1,029.61	1,900.41	1,420.86	1,071.72	2,552.06	2,602.82
Revenue of Household (thousand kip/household/Year)*	100,000	5,202.40	23,600	31,300	4,980.05	4,491.02	15,500	18,200
Revenue of Household (thousand kip/household/Month)*	833.42	433.53	1,970.04	2,604.73	415.00	374.25	1,290.27	1,519.58
Revenue of Household (thousand kip/household/Year)**	3,283.69	2,057.67	10,000	16,200	4,532.40	3,262.39	28,400	32,900
Revenue of Household (thousand kip/household/Month)**	273.64	171.47	836.83	1,350.95	377.70	271.87	2,367.41	2,742.78

Table 11: Poverty and inequality of poor and non-poor household with and without children (Baseline of simulation)

Item	Baseline		
	With children	Without children	Total
GINI Index (base on consumption)			
National	0.6155	0.6544	0.6301
Rural	0.4367	0.6166	0.5899
Urban	0.5936	0.6634	0.6268
Region			
Vientiane Capital	0.5473	0.6249	0.5910
North	0.4895	0.6796	0.5622
Central	0.4943	0.5697	0.5167
South	0.8010	0.9648	0.8339
Poverty Index (base on consumption)			
National	0.1631	0.1146	0.1545
Rural	0.0829	0.1807	0.1620
Urban	0.0007	0.3355	0.1290
Region			
Vientiane Capital	0.0042	0.0000	0.0023
North	0.0029	0.0000	0.0024
Central	0.0053	0.0871	0.256
South	0.6269	0.9247	0.6865

The impact of trade liberalization and cash transfers on welfare, inequality and poverty is shown in table 12; 13; 14. Trade liberalization increases national welfare. It seems that rural non-poor will gain more in terms of welfare than the rural poor. The urban non-poor will gain but the urban poor will lose from trade liberalization (Table 12). Therefore, it is important to have direct support for the poor. Unsurprisingly, cash transfers will improve welfare on a national level in cash transfer 1 and 2. It shows that cash transfers will help the poor during the implementation of trade liberalization (Table 12).

Table 12: Impact of trade liberalization and cash transfers on welfare changes

Item	Trade Liberalization		Cash Transfer 1		Cash Transfer 2	
	Per Capita (Kip)	Percent (%)	Per Capita (Kip)	Percent (%)	Per Capita (Kip)	Percent (%)
National	99,392	3.34	8,805	0.25	55,291	1.58
Rural	98,448	4.70	10,700	0.43	57,349	2.31
Rural Poor	2,307	0.14	54,477	3.81	54,477	3.18
Rural non Poor	122,052	5.52	0	0.00	58,051	2.17
Urban	101,722	1.98	4,125	0.07	50,207	0.84
Urban Poor	-37,347	-1.16	54,981	1.70	54,981	1.70
Urban non Poor	113,091	2.13	0	0.00	49,820	0.80
Region						
Vientiane Capital	97,389	1.58	188	0.003	44,900	0.61
North	48,945	1.87	13,146	0.39	56,130	1.68
Central	78,620	2.15	9,731	0.24	56,715	1.41
South	214,941	36.73	5,218	0.82	57,299	9.01
Rural Poor by Region						
Vientiane Capital	212,802	10.00	107,125	5.03	107,125	5.03
North	1,973	0.11	53,758	2.86	53,758	2.86
Central	-21,989	-1.22	54,789	3.03	54,789	3.03
South	62,975	8.04	56,305	7.19	56,305	7.19
Rural non Poor by Region						
Vientiane Capital	144,649	3.04	0	0.00	79,318	1.87
North	34,579	1.42	0	0.00	68,975	2.50
Central	122,097	4.36	0	0.00	70,328	2.61
South	226,872	45.36	0	0.00	43,258	1.75
Urban Poor by Region						
Vientiane Capital	-288,666	-5.82	14,325	0.29	14,325	0.29
North	-460	-0.01	51,233	1.57	51,233	1.57
Central	-65,026	-1.96	58,584	1.76	58,584	1.76
South	453,221	149.72	40,328	13.32	40,328	13.32
Urban non Poor by Region						
Vientiane Capital	76,339	1.10	0	0.00	41,704	0.48
North	166,686	3.74	0	0.00	49,472	1.05
Central	62,983	1.00	0	0.00	52,762	0.74
South	236,162	28.64	0	0.00	58,529	7.05

Source: Authors' estimation.

Trade liberalization will reduce poverty on the national level, and it seems that trade liberalization will particularly reduce poverty in the southern part of Laos compared to other regions (Table 12). In addition, cash transfers will contribute to poverty reduction but the impact is small in cash transfer simulation 1 (which makes cash transfers to poor households with children in rural and urban areas). However, cash transfer simulation 2 (which makes cash transfers to poor and non-poor households with children in rural and urban areas) will have a significant impact on the national level. It seems that rural households will gain more than urban households from cash transfer simulation 2. In addition, southern Laos will gain more compared to other regions (Table 12). It indicate that cash transfer only with poor with children

Surprisingly trade liberalization will reduce inequality on the national level, and it seems that inequality will be reduced more in rural rather than urban areas and in the northern part of Laos, inequality will decrease more than in other parts. Moreover, cash transfers will also increase equality nationally especially in rural areas (Table 13). It shows that cash transfers could help narrow inequality during trade liberalization especially in rural areas.

Table 13: Impact of trade liberalization and cash transfers on poverty

				Impact of Cash transfer					
	Trade Liberalization			Cash Transfer 1			Cash Transfer 2		
	Baseline (%)	Simulated (%)	Change (% point)	Baseline (%)	Simulated (%)	Change (% point)	Baseline (%)	Simulated (%)	Change (% point)
National	25.78	25.63	-0.15	25.78	25.73	-0.050	25.78	25.26	-0.523
Rural	29.65	29.48	-0.17	29.65	29.60	-0.049	29.65	29.01	-0.637
Urban	20.26	20.16	-0.10	20.26	20.20	-0.055	20.26	20.12	-0.137
Region									
Vientiane Capital	16.79	16.78	-0.01	16.79	16.79	0.000	16.79	16.79	0.000
North	31.77	31.73	-0.04	31.77	31.77	0.000	31.77	31.56	-0.214
Central	27.35	27.22	-0.13	27.35	27.32	-0.026	27.35	26.76	-0.587
South	22.18	21.73	-0.45	22.18	21.98	-0.197	22.18	20.98	-1.200

Source: Authors' estimation.

Table 14: Impact of trade liberalization and cash transfers on inequality

				Impact of Cash transfer					
	Trade Liberalization			Cash Transfer 1			Cash Transfer 2		
	Baseline (%)	Simulated (%)	Change (% point)	Baseline (%)	Simulated (%)	Change (% point)	Baseline (%)	Simulated (%)	Change (% point)
National	45.26	44.65	-0.61	45.26	44.66	-0.598	45.26	44.66	-0.598
Rural	44.56	43.87	-0.69	44.56	43.79	-0.767	44.56	43.79	-0.767
Urban	45.87	45.62	-0.25	45.87	45.76	-0.105	45.87	45.76	-0.105
Region									
Vientiane Capital	48.03	47.63	-0.40	48.03	48.03	-0.003	48.03	48.03	-0.003
North	43.84	42.86	-0.98	43.84	43.09	-0.748	43.84	43.09	-0.748
Central	42.88	42.41	-0.47	42.88	42.31	-0.569	42.88	42.31	-0.569
South	42.37	42.23	-0.14	42.37	41.51	-0.860	42.37	41.51	-0.860

Source: Authors' estimation.

8. CONCLUSION

The impact of trade liberalization seems to be negative for poor rather than non-poor households. In many developing countries, it is important to help the poor from negative impacts of trade liberalization by creating social protection programs. However, there has been a lack of studies about whether social protection programs are effective or not in Laos. Therefore, the main objective of this study is to develop the Computable General Equilibrium (CGE) model and use Micro-simulation to assess the impact of social protection programs on poverty and income distribution during trade liberalization. Trade liberalization with consideration of the role of Foreign Direct Investment (FDI) and the improvement of trade facilitation will increase national welfare. It seems that rural non-poor households will gain more welfare than the rural poor, and it will reduce poverty on the national level and it seems that southern Laos will experience greater reductions in poverty than other regions. Surprisingly trade liberalization will reduce inequality on the national level, and it seems that inequality will be reduced more in rural rather than urban areas. Unsurprisingly, cash transfers will improve welfare on the national level in both cash transfer simulation 1 and 2. Cash transfers will contribute to poverty reduction, but the impact is small in cash transfer simulation 1 and large in cash transfer simulation

2. Moreover, cash transfers will also increase equality nationally, especially in rural areas. It indicates that cash transfers will help to improve welfare, reduce poverty and narrow inequality during trade liberalization. This empirical result is important for policy makers designing social protection programmes in order to mitigate negative impacts from trade liberalization.

There are benefits and costs of cash transfer program and there are some issues need to be considered in order to formulate programs. Main advantages of cash transfers are as follows. First, individual is freedom to allocate money to what they need. Second, as cash transfer some time is small program for specific group, therefore, it is not large distortion in the economy and may have multiplier effects on economy. Third, as cash transfer program focus on specific group in specific areas, therefore, it is easier to predict the budget.

In on the other hand, cash transfer also has costs. First, it might has negative incentives to change behavior of individual. Second, it may create dependency on cash transfer program, and reduce other incentives. Third, if it is large program which require large expenditure, it might cause high inflation. Fourth, it might cause crowd-out private and informal transfers such as remittance and credits. Fifth, it has less capacity to monitor their allocation within the households.

There are various issue related with cash transfer program. First is universal vs targeted. Targeting is preferred as the government has budget constraints. Coady et al (2004) argued that targeting is a mean of increasing program efficiency by increase the benefits for poor. However, some researchers argued that universal provision is preferred according to some factors such as weak administrative capacities, high costs of targeting, and poor of targeting.

Second is identified the poor. There are various issues on identification the poor. First, the information on living standard is imperfect. Second, it is difficult to monitor and measure income, and there are different criteria of targeting to identify the poor. Third is intrahousehold allocation. Allocation rule within the household will be affected by the transfer program (Blundell et al., 2005). In the developing countries, received by a female member has positive effect on children's nutrition, child schooling (Duflo, 2003).

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Appendix 1. The Value of Cash Transfer to Households with Children

The Value of Cash Transfer to Households with Children

Items	Households with Children		
	Number of households	Value of cash transfer (in Kip)	Value of cash transfer (in USD)
National	***741,246***	***871,983,860,403***	***99,723,794***
Rural	590,367	613,982,067,743	70,217,609
Urban	150,878	258,001,792,659	29,506,186
Poor	128,377	139,383,545,793	15,940,497
Non-poor	612,869	732,600,314,609	83,783,297
Region			
Vientiane Capital	48,793	71,850,729,207	8,217,156
North	292,756	288,149,018,021	32,953,951
Central	240,055	267,065,145,727	30,542,709
South	159,642	244,918,967,448	28,009,978

Note: 1) Exchange Rate was 8,743.99 kip per USDS, which is referred to Monetaly Policy Department, Bank of the Lao PDR, 2008

2) Number of households in Laos was 982,485 households (in 2007),

which is referred to Country Analysis Report: Lao People's Democratic Republic of The United Nations in the Lao PDR, 2012.

Appendix 2. The Detail of Value of Cash Transfer to Households with Children

Items	With Children		Total	
	Number of households	Value of cash transfer	Value of cash transfer (in Kip)	Value of cash transfer (in USD)
Rural Poor by Region				
Vientiane Capital	118	1,040,000	123,165,911	14,086
North	66,083	1,040,000	68,726,578,496	7,859,865
Central	37,305	1,040,000	38,797,262,054	4,437,020
South	16,106	1,040,000	16,750,563,934	1,915,666
Rural Non poor by Region				
Vientiane Capital	17,172	1,040,000	17,859,057,136	2,042,438
North	137,377	1,040,000	142,872,457,088	16,339,504
Central	141,404	1,040,000	147,060,098,071	16,818,420
South	174,801	1,040,000	181,792,885,053	20,790,610
Urban Poor by Region				
Vientiane Capital	118	1,710,000	202,513,181	23,160
North	3,790	1,710,000	6,480,421,794	741,129
Central	4,027	1,710,000	6,885,448,156	787,449
South	829	1,710,000	1,417,592,267	162,122
Urban Non poor by Region				
Vientiane Capital	31,384	1,710,000	53,665,992,979	6,137,472
North	40,976	1,710,000	70,069,560,644	8,013,454
Central	43,463	1,710,000	74,322,337,446	8,499,820
South	26,291	1,710,000	44,957,926,193	5,141,580
Total	**741,246**		**871,983,860,403**	**99,723,794**

Note: 1) Exchange Rate was 8,743.99 kip per USDS, which is referred to Monetaly Policy Department, Bank of the Lao PDR, 2008

2) Number of households in Laos was 982,485 households (in 2007),

which is referred to Country Analysis Report: Lao People's Democratic Republic of The United Nations in the Lao PDR, 2012.